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Helicoma barretoi sp. nov. from the Brazilian Atlantic rainforest

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Abstract—A new species, *Helicoma barretoi*, collected on dead twigs in Paraíba State of northeastern Brazil, is described and illustrated. It is distinguished by frequent branched conidiophores, cylindrical conidiogenous cells constricted at basal septa, and broad terminal denticles.

Key words—helicosporic fungi, tropical fungi, *Tubeufiaceae*, *Tubeufiales*

Introduction

During a survey of microfungi on miscellaneous plant debris in the Atlantic rainforest, an interesting specimen related to *Helicoma* Corda (1837) was collected. Based on molecular data, *Helicoma* is phylogenetically placed in the *Tubeufiaceae*, *Tubeufiales* (Barr 1979, Boonmee & al. 2014). Lu & al. (2018) accepted 57 and excluded 12 species, although there are 99 epithets listed in Index Fungorum (2020) and more than a hundred in Mycobank (2020). *Helicoma* is characterized by conidiophores that are macronematous, mononematous, erect, cylindrical, branched or unbranched, and pale brown or dark brown. The conidiogenous cells are mono- or polyblastic, integrated, sympodial, intercalary and/or terminal, cylindrical with tiny or tooth-like denticles, and smooth walled. The conidia are dry, solitary, acropleurogenous or pleurogenous, helicoid, coiled in two or three dimensions (becoming loosely coiled in water), multiseptate, hyaline to pale brown, and non-hygroscopic (Goos 1986, Seifert 2011, Lu & al. 2018).

Material & methods

Miscellaneous plant debris substrates were collected during expeditions in Fazenda Engenho Mineiro (Areia, Paraíba, Brazil). Samples were placed in separate paper bags, taken to the laboratory, and processed according to Castañeda-Ruiz & al. (2016). The samples were incubated in Petri dish moist chambers at room temperature in polystyrene containers and examined daily. Microfungal reproductive structures placed on microscope slides prepared with PVL (polyvinyl alcohol and lactic acid) were measured and photographed using a microscope equipped with Differential Interference Contrast (DIC). The holotype was deposited in the Herbarium, Universidade Estadual de Feira de Santana, Feira de Santana, Bahia, Brazil (HUEFS).

Taxonomy

Helicoma barretoi G.G. Barreto, L.T. Carmo & Gusmão, **sp. nov.** PLATE 1

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Differs from other *Helicoma* species by its frequently branched conidiophores and cylindrical conidiogenous cells constricted at basal septa and with broad terminal denticles.

TYPE: Brazil, Paraíba State: Areia, Fazenda Engenho Mineiro, 6°57′48′S 35°41′30′W, on decaying twigs of an unidentified plant, 15.VIII.2019, coll. G.G. Barreto (**Holotype**, HUEFS254151).

ETYMOLOGY: honoring Francisco Haroldo Barreto, the owner of the farm where the holotype specimen was collected.

COLONIES on natural substrate effuse, dark brown. Mycelium immersed and superficial, composed of branched, septate, brown, smooth hyphae, 7–8 µm wide. CONIDIOPHORES macronematous, mononematous, cylindrical, erect, slightly flexuous, mostly branched at the apex, sometimes simple, solitary or aggregated in groups, smooth-walled or verrucose at the base, 6–22-septate, sometimes branched, slightly constricted at the septa, dark brown at bases, pale brown toward apex, 90–207.5 × 5–7.5 µm. CONIDIOGENOUS CELLS mono- or polyblastic, integrated, terminal, cylindrical, smooth-walled, with 1–2 percurrent extensions, constricted at the bases, brown to hyaline toward the

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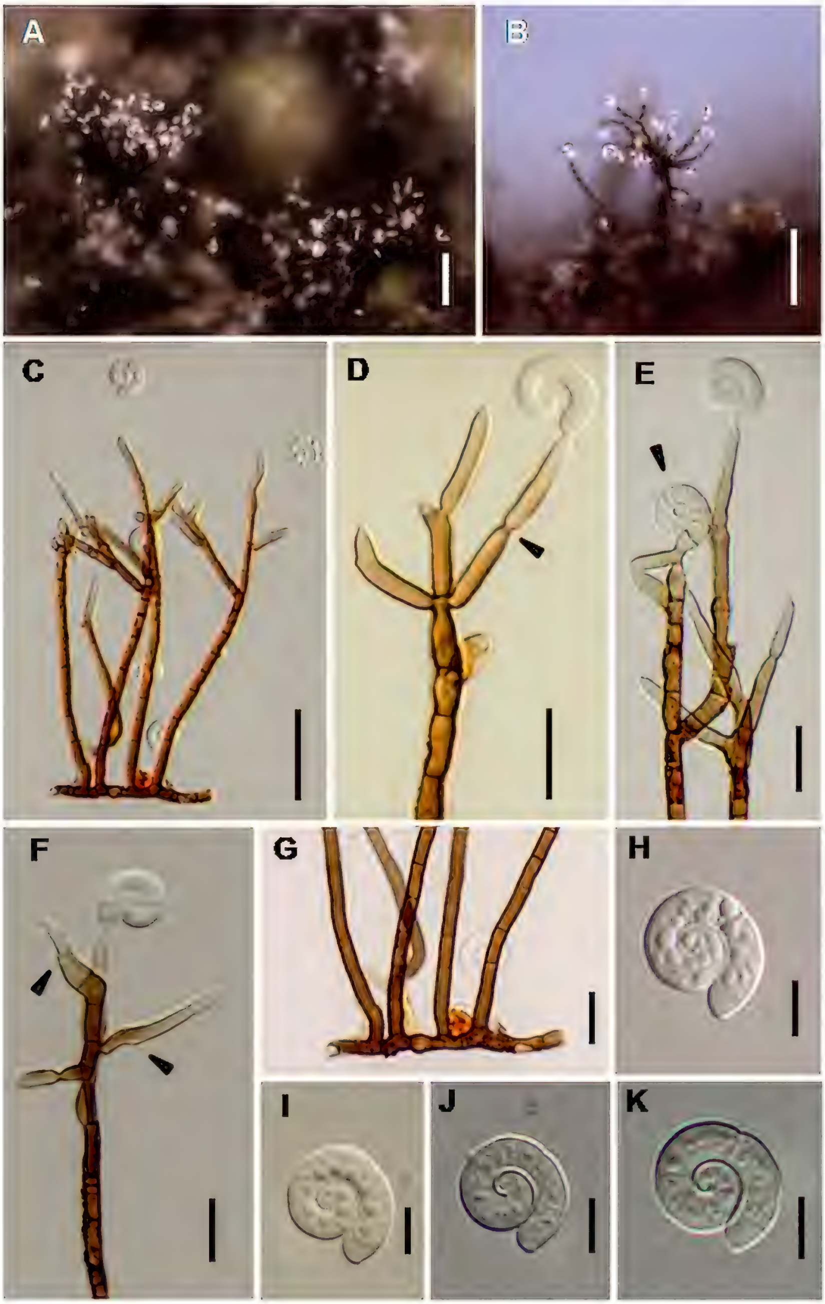
PLATE 1. *Helicoma barretoi* (holotype, HUEFS 254151): A, B. Colonies on the natural substrate; C. General aspect of conidiophores; D. Conidiogenous cells with constriction (arrow) and young conidia; E. Branched conidiophores with conidia and evident septa (arrow); F. Percurrent extensions (arrows); G. Ornamented basal cells of conidiophores; H–K. Conidia. Scale bars: A, B =100 µm; C = 50 µm; D–G = 20 µm, H–K= 10 µm.


A
B
C
D
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apex, 10–35 × 5–7.5 µm, with terminal and broad denticles, 1.3–1.5 µm diam., pale brown to hyaline toward the denticles. Conidial secession schizolytic. Conidia acrogenous, single, dry, smooth, guttulate, hyaline, tightly coiled 1½ times, 18–23.5 µm diam., conidial filament hyaline, 5–10 µm thick, 9–11 septa (sometimes indistinct), apex rounded, bases truncate, U-shaped, also smooth-walled.

Notes: *Helicoma barretoi* differs from similar species primarily in the (3–4) lateral branching pattern of the conidiophores and the large conidiogenous cell with broad denticles. *Helicoma ambiens* Morgan, which like *H. barretoi* possesses U-shaped basal conidial cells, is distinguished by its rarely branched conidiophores and acropleurogenous conidia (Morgan 1892, Zhao & al. 2007). *Helicoma dennisii* M.B. Ellis produces similarly shaped conidia but is separated from *H. barretoi* by its acropleurogenous and pigmented conidia with V-shaped basal cells and rarely branched conidiophores (Ellis 1963, Zhao & al. 2007). *Helicoma divaricatum* Hol.-Jech. also has similar conidia but can be distinguished by its dichotomously branched conidiophores and acropleurogenous conidia (Holubová-Jechová 1987). *Helicoma vaccinii* Carris, which also produces percurrent proliferations, can be distinguished from *H. barretoi* by its smaller (2–4 µm) conidial filaments, narrower (8–13 µm) conidia, and unbranched conidiophores (Carris 1989, Zhao & al. 2007). *Helicoma guttulatum* Y.Z. Lu & al. and *H. hydei* N.G. Liu & al. have guttulate conidia like *H. barretoi;* however *H. guttulatum* has hyaline to pale brown conidia and unbranched conidiophores (Hyde & al. 2016), and *H. hydei* has unbranched conidiophores and larger conidia (19–39 µm diam; Liu & al. 2019).

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